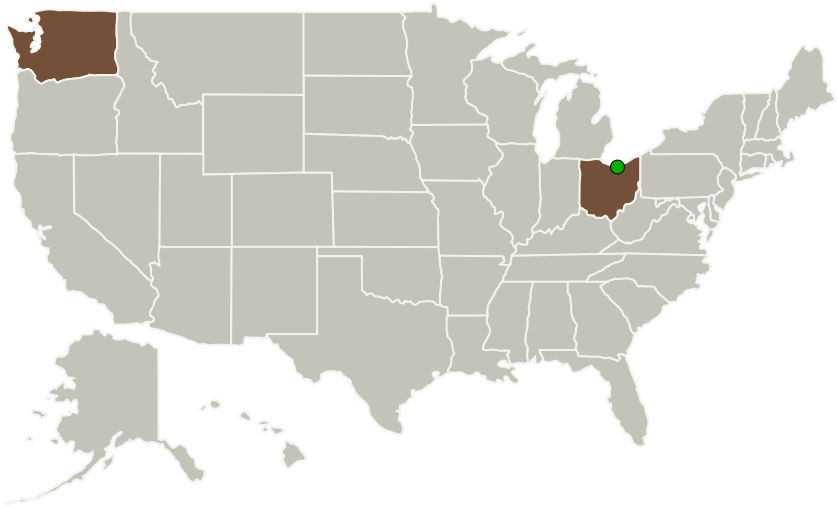
Non-Catalytic Ignition System for High Performance Advanced Monopropellant Thrusters, Phase I

Completed Technology Project (2014 - 2014)

Project Introduction

Systima Technologies, Inc. is developing a non-catalytic ignition technology for advanced green ionic salt monopropellants such as HAN-based monopropellant AF-M315E. Green (non-hazardous, low toxicity) monopropellants such as AF-M315E offer significant advantages in performance and reduced handling infrastructure for vehicles and payloads compared to traditional hydrazine systems. Systima's innovative ignition technology does not require a catalyst bed, thus avoiding the need to pre-heat the thruster chamber, is light weight, and operates with very low power. This approach is well suited for applications that require a lower system weight, less power consumption and increased thruster lifetime, and is also well suited for auxiliary power units (APU's). The Phase I program will establish parameters for non-catalytic ignition of AF-M315E. In Phase II we will conduct extended life hot-fire testing, evaluate system performance, and identify paths to flight demonstration in collaboration with Aerojet Rocketdyne.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Systima Technologies, Inc.	Lead Organization	Industry	Kirkland, Washington
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Non-Catalytic Ignition System for High Performance Advanced Monopropellant Thrusters Project Image

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Primary U.S. Work Locations	
Ohio	Washington

Project Transitions

June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137718)*

Images

Project Image
Non-Catalytic Ignition System for High Performance Advanced Monopropellant Thrusters Project Image
(https://techport.nasa.gov/image/128173)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Systima Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

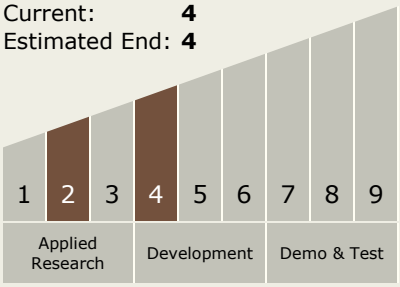
Carlos Torrez

Principal Investigator:

Stephanie Sawhill

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.2 Earth Storable

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System